Natural RPC Version 5.1.1

As of Natural Version 5.1.1 PL 5 for UNIX and OpenVMS, the Natural Remote Procedure Call is available as a separate subcomponent of Natural. This measure will enable the Natural development team to provide new Natural RPC versions independent of new Natural versions for the various platforms supported. Currently, the old and the new Natural RPC versions are both available.

Note:
The default installation of Natural Version 5.1.1 PL 5 will use the old Natural RPC version.
For details on installing the new Natural RPC with Natural Version 5.1.1 PL 5, see RPC Installation below.

This section describes the product features, changes and enhancements introduced with Natural RPC Version 5.1.1. The following topics are covered:

New Features

- Support of Large and Dynamic Alpha and Binary Variables
- Maximum Length for Node and Server Names Increased to 32 Characters
- Support of the EntireX Broker ACI V6
- Support of SSL for the TCP/IP Communication
- Support of EntireX Location Transparency
- New User Exit USR2035N
- Prerequisites

Enhanced Features

- Support of Multiple EntireX Broker Logons (User EXIT USR2071N)
- Enhancements to User Exits
- Enhancements to Status Function RPCINFO

SYSRPC Utility Enhancements and Modifications

- Generation of Service Directory (NATCLTGS) in User Library
- Support of Long Node and Server Names
- Support of EntireX Location Transparency
- Add Properties for Old Remote Directory and the Transport Protocol to Local Directory

Changed Features

- Implicit END TRANSACTION in a Conversation
- Release of Adabas Retain Sets
- Changes to RPCERR
- Changes to PIng and TErminate Messages
- Service Directory (NATCLTGS) in User Library

Natural RPC Installation

- Installation of the New Natural RPC under UNIX
- Installation of the New Natural RPC under OpenVMS

New Features

- Support of Large and Dynamic Alpha and Binary Variables
- Maximum Length for Node and Server Names Increased to 32 Characters
- Support of the EntireX Broker ACI V6
- Support of SSL for the TCP/IP Communication
- Support of EntireX Location Transparency
- New User Exit USR2035N
- Prerequisites

Support of Large and Dynamic Alpha and Binary Variables

With Natural RPC Version 5.1.1, large alpha/binary and dynamic alpha/binary formats are supported in the parameter list of a remote CALLNAT execution. In case of dynamic alphay/binary variables, the server may increase or decrease the size of the received dynamic variables. Only the current size is sent back to the client.

Large and dynamic alpha and binary variables are only supported with automatic RPC execution, that is without using Natural RPC stubs.

In case of dynamic alpha and binary variables the client uses the value of the Natural RPC profile parameter MAXBUFF for the receive buffer length. If either Entire Net-work is used as transport layer or the Natural profile parameter ACIVERS is less than 3 the value for MAXBUFF must not exceed:

- 32 (ACIVERS=1, Entire Net-work and TCP/IP)
- 30 (ACIVERS=2, Entire Net-work and TCP/IP)
- 30 (ACIVERS=3 and above, Entire Net-work only)

Maximum Length for Node and Server Names Increased to 32 Characters

With Natural RPC Version 5.1.1, the maximum length for node and server name has been increased to 32 characters to be compliant with the EntireX Broker ACI. This enhancement allows you to specify a fully qualified TCP/IP node name and makes the etc/hosts and etc/services definitions obsolete.

Neither the interface nor the internal structure of the local directory NATCLTGS has been changed. See also Support of Long Node and Server Names below.

Support of the EntireX Broker ACI V6

The Natural RPC profile parameter ACIVERS has been enhanced to enable you to specify Version 6.

Support of SSL for the TCP/IP Communication

Secure Socket Layer (SSL) support for the TCP/IP communication to the EntireX Broker has been introduced. To enable the EntireX Broker to recognize that the TCP/IP communication should use SSL, you have to use one of the following methods:

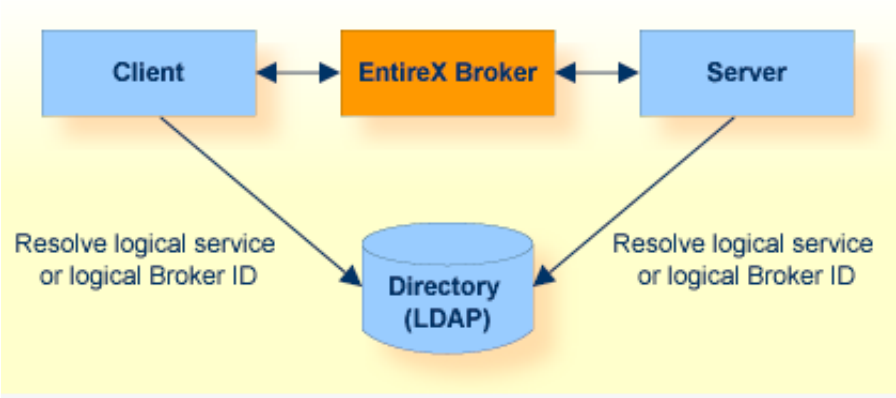
- Append the string :SSL to the node name.
- Prefix the node name with the string //SSL:

To use SSL, an SSL parameter string must be passed to the EntireX Broker on the very first call.

For more details about SSL and the SSL parameter string, see the EntireX documentation.

Support of EntireX Location Transparency

With EntireX, location transparency is possible. Instead of using the physical node name and the physical server name, a server can be addressed by a logical name. This makes the location of the EntireX Broker and the name of the server transparent to clients and servers.The logical name is mapped to the physical node and server names by the EntireX Broker stub before it is used the first time.



For more details about the EntireX Location Transparency, see the **EntireX documentation**.

To take advantage of location transparency, the Natural RPC has been enabled to accept a logical name wherever only a physical node and a physical server name could be specified before.

The maximum length of a logical name is 192 characters. To avoid new Natural profile parameters, a logical name is specified in the server name and node name part of the already existing parameters. There are two kinds of logical names:

- **Logical node names**
  With a logical node name, you specify a logical name for a node only in conjunction with a physical server name.
- **Logical services**
  With a logical service, you specify a logical name for both the node and the server. To define a logical service, the node name has to be set to *, and the server name contains the logical service name.

The following components refer to node and server names:

- The Natural profile parameters SRVNODE, SRVNAME, DFS and RDS.
- Service maintenance of the SYSRPC utility
- Service directory (NATCLTGS)
- User exits USR2007N, USR2071N
- Service programs RPCERR, RPCINFO

The new information about logical service names is stored in the local directory NATCLTGS without changing its interface or its internal structure. All information is stored as attribute/ value pairs and the logical service names are just added under a new attribute.

The interface to the user application programming interfaces (user exits) USR2007N and USR20071N has not been changed. To be able to retrieve or specify long logical service names, the respective PDA fields have been defined with the VALUE RESULT option and their length has been increased.

New User Exit USR2035N

For the support of the Secure Socket Layer (SSL) communication, the new user exit USR2035N is provided to set the required SSL parameter string.

Prerequisites

- EntireX Version 6.2 if you want to use location transparency.

Enhanced Features

- Support of Multiple EntireX Broker Logons (User EXIT USR2071N)
- Enhancements to User Exits
- Enhancements to Status Function RPCINFO

Support of Multiple EntireX Broker Logons (User Exit USR2071N)

The user exit USR2071N has been enhanced to allow you to Logon to multiple EntireX Brokers concurrently. That is, if you have already issued a Logon to an EntireX Broker, a Logon to a new EntireX Broker does no longer imply the Logoff from the current one.

Enhancements to User Exits

To support long node and server names, the user exits USR2007N and USR2071N have been enhanced to accept and return node and server names having a length of up to 192 characters. Existing callers who are using 8-character-long names will still work and need not be adapted.

Enhancements to Status Function RPCINFO

To support long node and server names, the RPCINFO subprogram has been enhanced to return the up to 32 character long physical node and server names. Existing callers which use 8 character long names will still work and need not be adapted. For compatibilty reasons, the RPCINFOL local data area still uses 8-character-long node and server names.

SYSRPC Utility Enhancements and Modifications

With Natural RPC Version 5.1.1, the following changes and enhancements have been made to the Natural SYSRPC utility:

- Generation of Service Directory (NATCLTGS) in User Library
- Support of Long Node and Server Names
- Support of EntireX Location Transparency
- Add Properties for Old Remote Directory and the Transport Protocol to Local Directory

A short description of these changes and enhancements is given below. For more details, refer to the SYSRPC utility documentation.

Generation of Service Directory (NATCLTGS) in User Library

The generated service directory (subprogram NATCLTGS) is stored in the current user library. For this reason, it is recommended to LOGON to the application library (or one of its STEPLIBs) used by the client at runtime library before you invoke the SYSRPC utility.

Support of Long Node and Server Names

To be compliant with the EntireX Broker, the Service Directory Maintenance function enables you to specify node and server names of up to 32 characters. For compatibility reasons, a new editing functionality of the Service Directory Maintenance is provided in addition to the existing one. The new editing functionality will only be used if the new Natural RPC is activated. Otherwise, the old editing functionality will still be used.

Support of EntireX Location Transparency

To support the EntireX Location Transparency, the Service Directory Maintenance function enables you to specify logical node names and logical services of up to 192 characters. For compatibility reasons, this support is only available if the new Natural RPC is activated.

Add Properties for Old Remote Directory and the Transport Protocol to Local Directory

The RDS specific properties "expiration time" and "unique directory identifier" are integrated into the local directory using appropriate tags.

The property "transport protocol" has also been added, which makes the Natural profile parameter ACIPATT obsolete. For compatibility reasons, ACIPATT is still supported, but ignored.

Changed Features

- Implicit END TRANSACTION in a Conversation
- Release of Adabas Retain Sets
- Changes to RPCERR
- Changes to PIng and TErminate Messages
- Service Directory (NATCLTGS) in User Library

Implicit END TRANSACTION in a Conversation

If OPRB=OFF has been set on the Natural RPC server side, an implicit END TRANSACTION statement is issued at the end of the execution of each remote subprogram. This may lead to inconsistent data in the database if a conversation is established which should be rolled back as part of the database transaction when the modifications are already committed.

With Natural RPC Version 5.1.1, the OPRB setting has no effect on the conversation. An implicit END TRANSACTION is still executed after execution of the last remote CALLNAT of a conversation if OPRB=OFF is specified.

Non-conversational CALLNATs are not affected and behave as before. That is if OPRB=OFF is specified on the server side, an implicit END TRANSACTION is executed at the end of the execution of the remote subprogram.

Release of Adabas Retain Sets

At the end of a non-conversation CALLNAT and at the end of a conversation, a RELEASE SETS is issued to release all Adabas retain sets. This ensures that the next request which may be for a different client will not see the data.

Changes to RPCERR

To support long node and server names, the RPCERR program shows the up to 32 character long physical node and server names. The display window has been adapted accordingly. For compatibility reasons, the long names will only be shown if the new RPC is activated for this session. Otherwise, the short names will still be shown.

Changes to PIng and TErminate Messages

The PIng and TErminate messages have been enhanced and indicate that there is a Natural RPC server (in contrast to an EntireX RPC server) and the operating system where the Natural RPC server is running (e.g. MVS/ESA).

Service Directory (NATCLTGS) in User Library

The service directory (subprogram NATCLTGS) is no longer generated into library SYRPC but into the current user library. If you want to generate NATCLTGS in library SYSRPC, you must first LOGON to library SYSRPC before invoking the SYSRPC utility.

Note:
It is strongly recommended that you generate NATCLTGS in the user library and leave the library SYSRPC on the FNAT unchanged.

Natural RPC Installation

Installation of the New Natural RPC under UNIX

To activate the new Natural RPC, you must relink your Natural and set the new **make** parameter RPC=511.

If you do not specify the installation parameter RPC, the current Natural RPC version is installed (default).

Installation of the New Natural RPC under OpenVMS

To activate the new Natural RPC, you must set the logical name NATRPC to NATRPCX511*n*.EXE before you start your Natural, where *n* is the current patch level (*n*>=5).

To reactivate the current Natural RPC version, you must set the logical name NATRPC back to NATRPC511*n*.EXE (default), where *n* is the current patch level (*n*>=5).

